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**AMENDMENTS TO THE CLAIMS**

This listing of claims will replace all prior versions, and listings, of claims in the application:

**Listing of Claims**

Claims 1-14 (Cancelled).

Claim 15 (new): A device for the detection of at least one luminescent substance, with a radiation source for the emission of excitation radiation on the at least one luminescent substance, whereby the excitation radiation has at least one excitation wavelength at which the luminescent substance is excited to emit luminescent radiation, and with at least one radiation receiver which is insensitive to the excitation radiation, for the detection of the luminescent radiation, whereby the luminescent substance is located in the interior of a measurement chamber which is essentially impermeable to the radiation to which the radiation receivers are sensitive, and whereby the radiation source is located outside the measurement chamber such that the excitation radiation is injected through a wall area of the measurement chamber that faces the radiation source and is transparent for the excitation radiation through the measurement chamber into the interior of the measurement chamber, wherein the wall area is formed by a semiconductor substrate and that the at least one radiation receiver is integrated in the form of a semiconductor assembly into the semiconductor substrate.

Claim 16 (new): The device as claimed in claim 15, wherein the luminescent substance is realized so that the wavelength of the luminescent radiation is less than the excitation wavelength.

Claim 17 (new): The device as claimed in claim 15, wherein the semiconductor substrate is a silicon substrate.

Claim 18 (new): The device as claimed in claim 15, wherein it is realized in the form of a thermal imaging camera that has a plurality of radiation receivers located in the measurement chamber in the form of a two-dimensional matrix, with at least one associated optical imaging system for the imaging of the radiation source on the radiation receivers.

Claim 19 (new): The device as claimed in claim 15, wherein a boundary wall of the measurement chamber facing the wall area is realized in the form of a reflector for the reflection of the excitation radiation.

Claim 20 (new) The device as claimed in claim 15, wherein the transparent wall area is connected by means of an optical waveguide with the interior of the measurement chamber, and that the waveguide runs preferably parallel to the plane of extension of the transparent wall area, in particular to its inside facing the luminescent substance.

Claim 21 (new): The device as claimed in claim 15, wherein a measurement signal output of at least one radiation receiver is connected with a transponder for the transmission of the measurement signal or of a signal derived from it to a receiver part, and that the transponder is preferably integrated into the semiconductor substrate.

Claim 22 (new): The device as claimed in claim 15, wherein in the interior of the measurement chamber there are at least two luminescent substances with excitation wavelengths that are different from each other, and that associated with each of these luminescent substances there are radiation sources with a spectral distribution adapted to the excitation wavelength of the respective luminescent substance.

Claim 23 (new): The device as claimed in claim 15, wherein the measurement chamber is realized in the form of a flow-through measurement chamber with an interior cavity, at least one inlet opening and at least one outlet opening.

Claim 24 (new): The device as claimed in claim 15, wherein the interior cavity, on the surface of at least one radiation receiver, at least one receptor for a ligand, in particular for a biomolecule, a biological cell and/or at least one fragment of such a ligand, biomolecule or cell is immobilized, and that the ligand is marked with the at least one luminescent substance.

Claim 25 (new): The device as claimed in claim 17, wherein a plurality of radiation receivers are located next to one another, preferably in the form of a two-dimensional array, on the semiconductor substrate, and that different receptors are optionally located on the radiation receivers.

Claim 26 (new): The device as claimed in claim 24, wherein at least two of the different receptors have a different affinity for at least one ligand marked with the luminescent substance, and that optionally more than two receptors are provided that have a graduated affinity for the at least one ligand.